

WHAT IS CLAIMED IS:

1. An encoding method of a content performed by an encoder, comprising the steps of:

creating N items (where, N is a positive integer equal to or greater than 2) of encoded data from one received content; and

5 consolidating the N items of encoded data into at least one file as a single item of encoded data.

2. An encoding method of a content performed by an encoder, comprising the steps of:

creating N items (where, N is a positive integer equal to or greater than 2) of encoded data from one received content;

5 merging the N items of encoded data on a frame basis; and
storing the N merged items of encoded data into at least one file as a single track.

3. An encoding method of a content performed by an encoder, comprising the steps of:

creating N items (where, N is a positive integer equal to or greater than 2) of encoded data from one received content;

5 merging the N items of encoded data on a frame basis with the N items of encoded data shifted with each other by a predetermined length of time; and

storing the N merged items of encoded data into at least one file as a single track.

4. The encoding method of a content as defined in any one of claims 1-3, wherein said encoder encodes the content in such a way

that the encoded data can be decoded even if the same part of the content is exchanged among the N items of encoded data on a 5 per-encoding basis.

5. An encoding method of a content performed by an encoder, comprising the steps of:

creating N items (where, N is a positive integer equal to or greater than 2) of encoded data, each of which has a different 5 compression rate, from one received content;

merging the N items of encoded data on a frame basis with the N items of encoded data shifted with each other by a predetermined length of time; and

10 storing the N merged items of encoded data into at least one file as a single track.

6. An encoding method of a content performed by an encoder, comprising the steps of:

creating N items (where, N is a positive integer equal to or greater than 2) of encoded data, each of which has a different 5 compression rate, from one received content in such a way that the encoded data can be decoded even if the same part of the content is exchanged among the N items of encoded data on a per-encoding basis;

merging the N items of encoded data on a frame basis with the N items of encoded data shifted with each other by a predetermined 10 length of time; and

storing the N merged items of encoded data into at least one file as a single track.

7. The encoding method of a content as defined in any one of claims 1-6, further comprising the step, by said encoder, of adding an identifier of the same number to encoding units of the same part of the N items of encoded data as a header.

8. An encoding apparatus comprising:

means for creating N items (where, N is a positive integer equal to or greater than 2) of encoded data from one received content; and

5 means for consolidating the N items of encoded data into at least one file as a single item of encoded data.

9. An encoding apparatus comprising:

means for creating N items (where, N is a positive integer equal to or greater than 2) of encoded data from one received content;

means for merging the N items of encoded data on a frame basis;

5 and

means for storing the N merged items of encoded data into at least one file as a single track.

10. An encoding apparatus comprising:

means for creating N items (where, N is a positive integer equal to or greater than 2) of encoded data from one received content;

5 means for merging the N items of encoded data on a frame basis with the N items of encoded data shifted with each other by a predetermined length of time; and

means for storing the N merged items of encoded data into at least one file as a single track.

11. The encoding apparatus as defined in any one of claims 8-10,

further comprising means for encoding the content in such a way that the encoded data can be decoded even if the same part of the content is exchanged among the N items of encoded data on a 5 per-encoding basis.

12. An encoding apparatus comprising:

means for creating N items (where, N is a positive integer equal to or greater than 2) of encoded data, each of which has a different compression rate, from one received content;

5 means for merging the N items of encoded data on a frame basis with the N items of encoded data shifted with each other by a predetermined length of time; and

means for storing the N merged items of encoded data into at least one file as a single track.

13. An encoding apparatus comprising:

means for creating N items (where, N is a positive integer equal to or greater than 2) of encoded data, each of which has a different compression rate, from one received content;

5 means for encoding the content in such a way that the encoded data can be decoded even if the same part of the content is exchanged among the N items of encoded data on a per-encoding basis;

means for merging the N items of encoded data on a frame basis with the N items of encoded data shifted with each other by a 10 predetermined length of time; and

means for storing the N merged items of encoded data into at least one file as a single track.

14. The encoding apparatus as defined in any one of claims 8-13, further comprising means for adding an identifier of the same number to encoding units of the same part of the N items of encoded data as a header.

15. A program causing a computer, which constitutes an encoding apparatus that receives a content for encoding, to:

create N items (where, N is a positive integer equal to or greater than 2) of encoded data from one received content; and

5 consolidate the N items of encoded data into at least one file as a single item of encoded data.

16. A program causing a computer, which constitutes an encoding apparatus that receives a content for encoding, to:

create N items (where, N is a positive integer equal to or greater than 2) of encoded data from one received content;

5 merge the N items of encoded data on a frame basis; and
store the N merged items of encoded data into at least one file as a single track.

17. A program causing a computer, which constitutes an encoding apparatus that receives a content for encoding, to:

create N items (where, N is a positive integer equal to or greater than 2) of encoded data from one received content;

5 merge the N items of encoded data on a frame basis with the N items of encoded data shifted with each other by a predetermined length of time; and

store the N merged items of encoded data into at least one file

as a single track.

18. The program as defined in any one of claims 15-17, said program further causing the computer to encode the content in such a way that the encoded data can be decoded even if the same part of the content is exchanged among the N items of encoded data on a 5 per-encoding basis.

19. A program causing a computer, which constitutes an encoding apparatus that receives a content for encoding, to:

create N items (where, N is a positive integer equal to or greater than 2) of encoded data, each of which has a different compression rate, 5 from one received content;

merge the N items of encoded data on a frame basis with the N items of encoded data shifted with each other by a predetermined length of time; and

store the N merged items of encoded data into at least one file 10 as a single track.

20. A program causing a computer, which constitutes an encoding apparatus that receives a content for encoding, to:

create N items (where, N is a positive integer equal to or greater than 2) of encoded data, each of which has a different compression rate, 5 from one received content in such a way that the encoded data can be decoded even if the same part of the content is exchanged among the N items of encoded data on a per-encoding basis;

merge the N items of encoded data on a frame basis with the N items of encoded data shifted with each other by a predetermined

10 length of time; and

store the N merged items of encoded data into at least one file as a single track.

21. The program as defined in any one of claims 15-20, said program further causing the computer to add an identifier of the same number to encoding units of the same part of first to Nth encoded data as a header.

22. An encoding method of a content performed by an encoder, comprising the steps of:

creating encoded data from a received content;

creating Forward Error Correction data from the encoded data;

5 and

consolidating the encoded data and the Forward Error Correction data into at least one file as a single item of encoded data.

23. An encoding method of a content performed by an encoder, comprising the steps of:

creating encoded data from a received content;

creating Forward Error Correction data from the encoded data;

5 merging the encoded data and the Forward Error Correction data on a frame basis with the encoded data and the Forward Error Correction data shifted with each other by a predetermined length of time; and

10 storing the merged encoded data and the Forward Error Correction data into at least one file as a single track.

24. An encoding apparatus comprising:

means for creating encoded data from a received content;

means for creating Forward Error Correction data from the encoded data; and

5 means for consolidating the encoded data and the Forward Error Correction data into at least one file as a single item of encoded data.

25. An encoding apparatus comprising:

means for creating encoded data from a received content;

means for creating Forward Error Correction data from the encoded data;

5 means for merging the encoded data and the Forward Error Correction data on a frame basis with the encoded data and the Forward Error Correction data shifted with each other by a predetermined length of time; and

means for storing the merged encoded data and the Forward

10 Error Correction data into at least one file as a single track.

26. A program causing a computer, which constitutes an encoding apparatus that receives a content for encoding, to:

create encoded data from a received content;

create Forward Error Correction data from the encoded data; and

5 store the encoded data and the Forward Error Correction data into at least one file as one item of encoded data.

27. A program causing a computer, which constitutes an encoding apparatus that receives a content for encoding, to:

create encoded data from a received content;

create Forward Error Correction data from the encoded data;

5 merge the encoded data and the Forward Error Correction data on a frame basis with the encoded data and the Forward Error Correction data shifted with each other by a predetermined length of time; and

10 store the merged encoded data and the Forward Error Correction data into at least one file as a single track.

28. A content reception/reproduction method performed by a client apparatus, comprising the steps of:

receiving data created by merging plural items of encoded data; identifying each item of encoded data from the received data on 5 a per-encoding basis;

separating the received data into items of encoded data on a per-encoding basis; and

decoding the separated encoded data for output.

29. A content reception/reproduction method performed by a client apparatus, comprising the steps of:

receiving data created by merging plural items of encoded data; identifying each item of encoded data from the received data on 5 a per-encoding basis;

separating the received data into individual items of encoded data on a per-encoding basis;

rearranging the plurality of items of separated encoded data on a per-encoding basis to reconstruct the data into one item of encoded 10 data; and

decoding the reconstructed encoded data for output.

30. The content reception/reproduction method as defined in claim 29, further comprising the step of receiving information, by said client apparatus, at call processing time indicating that the plurality of items of encoded data will be sent.

31. A content reception/reproduction method performed by a client apparatus, comprising the steps of:

receiving data created by merging plural items of encoded data;

identifying each of the plurality of items of encoded data from

5 the received data on a per-encoding basis;

separating the received data into respective items of encoded data on a per-encoding basis;

reserving a buffer size determined by at least one of

(A) a predetermined reception buffer size,

10 (B) a buffer size notified by call processing, and

(C) a buffer size calculated based on a content distribution rate and time difference setting information

so that the plural items of encoded data on a per-encoding basis, which are sent with a time difference set, can be reconstructed into one
15 item of encoded data;

reconstructing the plurality of items of separated encoded data on a per-encoding basis to reconstruct the data into one item of encoded data; and

decoding the reconstructed encoded data for output.

32. A client apparatus comprising:

means for receiving data created by merging plural items of

encoded data;

means for identifying each of plural items of encoded data from
5 the received data on a per-encoding basis;

means for separating the received data into individual items of
encoded data on a per-encoding basis; and

means for decoding the separated encoded data for output.

33. A client apparatus comprising:

means for receiving data created by merging plural items of
encoded data;

means for identifying each of a plurality of encoded data from
5 the received data on a per-encoding basis;

means for separating the received data into individual items of
encoded data on a per-encoding basis;

means for rearranging the plurality of items of separated
encoded data on a per-encoding basis to reconstruct the data into one
10 item of encoded data; and

means for decoding the reconstructed encoded data for output.

34. The client apparatus as defined in claim 33, further comprising
means for accepting information at call processing time indicating that
the plurality of pieces encoded data will be sent.

35. A client apparatus comprising:

means for receiving data created by merging plural items of
encoded data;

means for identifying each item of encoded data from the
5 received data on a per-encoding basis;

means for separating the received data into items of encoded data on a per-encoding basis;

means for reserving a buffer size determined by at least one of

- (A) a predetermined reception buffer size,
- 10 (B) a buffer size notified by call processing, and
- (C) a buffer size calculated based on a content distribution rate and time difference setting information

so that the plural items encoded data on a per-encoding basis, which are sent with a time difference set, can be reconstructed into one

15 item of encoded data;

means for rearranging the plurality of items of separated encoded data on a per-encoding basis to reconstruct the data into one item of encoded data; and

means for decoding the reconstructed encoded data for output.

36. A program causing a computer, which constitutes a client apparatus, to:

receive data created by merging plural items of encoded data;

identify each item of encoded data from the received data on a

5 per-encoding basis;

separate the received data into individual items of encoded data on a per-encoding basis; and

decode the separated encoded data for output.

37. A program causing a computer, which constitutes a client apparatus, to:

receive data created by merging plural items of encoded data;

identify each item of encoded data from the received data on a
5 per-encoding basis;

separate the received data into individual items of encoded data
on a per-encoding basis;

rearrange the plurality of items of separated encoded data on a
per-encoding basis to reconstruct the data into one item of encoded
10 data; and

decode the reconstructed encoded data for output.

38. The program as defined in claim 37, said program further
causing the computer to receive information at call processing time
indicating that the plurality of encoded data will be sent.

39. A program causing a computer, which constitutes a client
apparatus, to:

receive data created by merging plural items of encoded data;

identify each item of encoded data from the received data on a
5 per-encoding basis;

separate the received data into individual items of encoded data
on a per-encoding basis;

reserve a buffer size determined by at least one of

(A) a predetermined reception buffer size,

10 (B) a buffer size notified by call processing, and

(C) a buffer size calculated based on a content distribution rate and
time difference setting information

so that the encoded data on a per-encoding basis, which is sent
with a time difference set, can be reconstructed into one item of

15 encoded data;

 rearrange the plurality of items of separated encoded data on a per-encoding basis to reconstruct the data into one item of encoded data; and

 decode the reconstructed encoded data for output.

40. A content reception/reproduction method performed by a client apparatus, comprising the steps of:

 receiving data created by merging encoded data and Forward Error Correction data;

5 identifying the encoded data and the Forward Error Correction data from the received data;

 separating the received data into the encoded data and the Forward Error Correction data; and

 decoding the separated encoded data for output.

41. A content reception/reproduction method performed by a client apparatus, comprising the steps of:

 receiving data created by merging encoded data and Forward Error Correction data;

5 identifying encoded data and Forward Error Correction data from the received data;

 separating the received data into the encoded data and the Forward Error Correction data;

10 calculating the encoded data and the Forward Error Correction data to reconstruct encoded data; and

 decoding the separated and reconstructed encoded data for

output.

42. The content reception/reproduction method as defined in claim 41, further comprising the step of receiving information, by said client apparatus, at call processing time indicating that the Forward Error Correction data will be sent.

43. A content reception/reproduction method performed by a client apparatus, comprising the steps of:

receiving data created by merging encoded data and Forward Error Correction data;

5 identifying the encoded data and the Forward Error Correction data from the received data;

separating the received data into the encoded data and the Forward Error Correction data;

reserving a buffer size determined by at least one of
10 (A) a predetermined reception buffer size,
(B) a buffer size notified by call processing, and
(C) a buffer size calculated based on a content distribution rate and time difference setting information

so that the encoded data and the Forward Error Correction data
15 on a per-encoding basis, which are sent with a time difference set, can be reconstructed into one item of encoded data;

calculating the encoded data and the Forward Error Correction data to reconstruct the encoded data; and

20 decoding the separated and reconstructed encoded data for output.

44. A client apparatus comprising:

means for receiving data created by merging encoded data and Forward Error Correction data;

means for identifying the encoded data and the Forward Error

5 Correction data from the received data;

means for separating the received data into the encoded data and the Forward Error Correction data; and

means for decoding the separated encoded data for output.

45. A client apparatus of content, comprising:

means for receiving data created by merging encoded data and Forward Error Correction data;

means for identifying the encoded data and the Forward Error

5 Correction data from the received data;

means for separating the received data into the encoded data and the Forward Error Correction data;

means for calculating the encoded data and the Forward Error Correction data to reconstruct the encoded data; and

10 means for decoding the separated and reconstructed encoded data for output.

46. The client apparatus as defined in claim 45, further comprising means for accepting information at call processing time indicating that the Forward Error Correction data will be sent.

47. A client apparatus comprising:

means for receiving data created by merging encoded data and Forward Error Correction data;

means for identifying the encoded data and the Forward Error

5 Correction data from the received data;

means for separating the received data into the encoded data and
the Forward Error Correction data;

means for reserving a buffer size determined by at least one of

(A) a predetermined reception buffer size,

10 (B) a buffer size notified by call processing, and

(C) a buffer size calculated based on a content distribution rate and
time difference setting information

so that the encoded data and the Forward Error Correction data
on a per-encoding basis, which are sent with a time difference set, can
15 be reconstructed into one item of encoded data;

means for calculating the encoded data and the Forward Error
Correction data to reconstruct encoded data; and

means for decoding the separated and reconstructed encoded
data for output.

48. A program causing a computer, which constitutes a client
apparatus, to:

receive data created by merging encoded data and Forward Error
Correction data;

5 identify the encoded data and the Forward Error Correction data
from the received data;

separate the received data into the encoded data and the Forward
Error Correction data; and

decode the separated encoded data for output.

49. A program causing a computer, which constitutes a client apparatus, to:

receive data created by merging encoded data and Forward Error Correction data;

5 identify the encoded data and the Forward Error Correction data from the received data;

separate the received data into the encoded data and the Forward Error Correction data;

10 calculate the encoded data and the Forward Error Correction data to reconstruct encoded data; and

decode the separated and reconstructed encoded data for output.

50. The program as defined in claim 49, further causing the computer to receive information at call processing time indicating that the Forward Error Correction data will be sent.

51. A program causing a computer, which constitutes a client apparatus, to:

receive data created by merging encoded data and Forward Error Correction data;

5 identify the encoded data and the Forward Error Correction data from the received data;

separate the received data into the encoded data and the Forward Error Correction data;

10 reserve a buffer size determined by at least one of
(A) a predetermined reception buffer size,
(B) a buffer size notified by call processing, and

(C) a buffer size calculated based on a content distribution rate and time difference setting information

so that the encoded data and the Forward Error Correction data 15 on a per-encoding basis, which are sent with a time difference set, can be reconstructed into one item of encoded data;

calculate the encoded data and the Forward Error Correction data to reconstruct the encoded data; and

decode the separated and reconstructed encoded data for output.

52. The content encoding method as defined in claim 22 or 23, wherein the Forward Error Correction data is FEC (Forward Error Correction) data.

53. The encoding apparatus as defined in claim 24 or 25, wherein the Forward Error Correction data is FEC (Forward Error Correction) data.

54. The program as defined in any one of claims 26, 27, and 48-51, wherein the Forward Error Correction data is FEC (Forward Error Correction) data.

55. The content reception/reproduction method as defined in any one of claims 40-43, wherein the Forward Error Correction data is FEC (Forward Error Correction) data.

56. The client apparatus as defined in any one of claims 44-47, wherein the Forward Error Correction data is FEC (Forward Error Correction) data.

57. A content distribution method comprising the steps, by a content distribution server, of receiving the file created by said encoder using

the content encoding method as defined in any one of claims 1-7 and distributing content to a client apparatus via a network.

58. The content distribution method as defined in claim 57, further comprising the step, by said client apparatus, of receiving data from said content distribution server for reproduction according to the content reception/reproduction method as defined in any one of claims
5 28-31.

59. A content distribution method comprising the steps, by a content distribution server, of receiving the file created by said encoder using the content encoding method as defined in any one of claim 22 or 23 and distributing content to a client apparatus via a network.

60. The content distribution method as defined in claim 59, further comprising the step, by said client apparatus, of receiving data from said content distribution server for reproduction according to the content reception/reproduction method as defined in any one of claims
5 40-43.

61. A content distribution system comprising:
the encoder device as defined in any one of claims 8-14;
a distribution server that receives a file, output from said encoder device, and distributes content; and
5 the client apparatus as defined in any one of claims 32-35,
wherein said client apparatus is connected to said distribution server for communication and receives content from said distribution server for reproduction.

62. A content distribution system comprising:

the encoder device as defined in claim 24 or 25;

a distribution server that receives a file, output from said encoder device, and distributes content; and

5 the client apparatus as defined in any one of claims 44-47, wherein said client apparatus is connected to said distribution server for communication and receives content from said distribution server for reproduction.

63. A content distribution system comprising:

an encoder that encodes content data or input data received from an image input device and records the data to a file;

a distribution server that distributes the data, recorded in the 5 file, to a client apparatus over a network; and

a client apparatus that selects the data, sent from said distribution server and received via the network, and decodes the selected data for reproduction,

wherein said encoder comprises:

10 a data input unit that receives content data or input data of the image input device;

first to Nth encoding units that encode the input data and outputs N items (N is a positive integer equal to or greater than 2) of encoded data;

15 a merge unit that merges the N items of encoded data into one item of continuous encoded data; and

a file output unit that outputs the one item of continuous encoded data and information on the continuous encoded data to the

file; and

20 wherein said client apparatus comprises:

 a reception unit that receives a packet from said distribution server via the network;

 a data processing unit that restores the received packet to continuous encoded data;

25 a data reconstruction unit that reconstructs the continuous encoded data to one item of encoded data and, for a part where plural items of encoded data are present, discards data of a relatively higher compression rate to eliminate data duplication in the same frame or the same part;

30 a decoding unit that decodes the reconstructed encoded data; and
 a reproduction unit that reproduces the decoded data and, for an image signal, displays the decoded data.

64. The content distribution system as defined in claim 63,

 wherein said distribution server comprises:

 a file input unit that reads data from the file;

5 a file analysis unit that divides the data, read by said file input unit, into transmission units;

 a call processing unit that performs information transfer and/or information exchange with said client apparatus based on information obtained by said file analysis unit;

 a packet generation unit that generates packets for transmission;

10 and

 a distribution unit that distributes packets of all the N items of

encoded data to the network; and

wherein said client apparatus further comprises a call processing unit that performs information transfer and/or information exchange 15 with said distribution server to obtain information on the distributed data.

65. A content distribution system comprising:

an encoder that encodes content data or input data received from an image signal input device and records the data to a file;

5 a distribution server that distributes the data, recorded in the file, to a client apparatus over a network; and

a client apparatus that selects the data, sent from said distribution server and received via the network, and decodes the selected data for reproduction,

wherein said encoder comprises:

10 a data input unit that receives content data or input data of the image signal input device;

an encoding unit that encodes each of the input data and outputs encoded data;

15 an FEC unit that generates Forward Error Correction (FEC) data of the encoded data from said encoder unit;

a merge unit that merges the encoded data and the Forward Error Correction data into one item of continuous encoded data; and

20 a file output unit that outputs the one item of continuous encoded data and information on the continuous encoded data to the file; and

wherein said client apparatus comprises:

a reception unit that receives a packet from said distribution server via the network;

25 a data processing unit that restores the received packet to continuous encoded data;

a data reconstruction unit that performs calculation using the Forward Error Correction data of the continuous encoded data to reconstruct the original encoded data;

30 a decoding unit that decodes the reconstructed encoded data; and a reproduction unit that reproduces the decoded data and, for an image signal, displays the decoded data.

66. The content distribution system as defined in claim 65,

wherein said distribution server comprises:

a file input unit that reads data from the file;

a file analysis unit that divides the data into transmission units;

5 a call processing unit that performs information transfer and/or information exchange with said client apparatus based on information obtained by said file analysis unit;

a packet generation unit that generates packets for transmission;

and

10 a distribution unit that distributes packets of the encoded data to the network; and

wherein said client apparatus further comprises

a call processing unit that performs information transfer and/or information exchange with said distribution server to obtain

15 information on the distributed data.

67. The content distribution system as defined in claim 63 or 65, wherein the input data is image data and/or audio data.

68. A content distribution method comprising the steps of:

when an encoder creates encoded data for distribution from content, creating either plural items of encoded data from the content or the encoded data and Forward Error Correction data, merging the created data, and storing the merged data into a file; and

sending, by a distribution server that distributes the content to a client apparatus, either packets of the plurality of items of encoded data or the encoded data and the Forward Error Correction data from the file,

10 whereby there is no need for said distribution server to create copies of the plurality of packets and the Forward Error Correction data at content distribution time.

69. The content distribution method as defined in claim 68, wherein said encoder arranges the plurality of items of created encoded data or the encoded data and the Forward Error Correction data alternately on a per-encoding basis.

70. The content distribution method as defined in claim 69, wherein, when merging the created data, said encoder arranges the plurality of items of encoded data on a per-encoding basis by shifting data of the same encoding unit with each other by a predetermined number of 5 encoding units to prevent the data of the same encoding unit from being arranged adjacently.